

Scombroid and Gastroenteritis Associated with Consumption of Escolar

Consumption of escolar, a large ocean fish increasingly found in Pacific Northwest groceries, restaurants, and other food outlets, carries risk of two forms of illness: scombroid and a unique gastroenteritis marked by oily diarrhea. The Washington State Department of Health Communicable Disease Epidemiology Section and several local health jurisdictions recently investigated two clusters of illness. As escolar and related species become more common in the menus of consumers and food professionals, healthcare providers and consumers need to be aware of the potential short-term adverse events associated with these fish.

Scombroid

Scombroid results from histamine intoxication caused by scombrotoxin, which is produced when bacteria contaminating the fish decarboxylate histidine to histamine. Although scombroid is *not* an allergic reaction, the symptoms are similar to those experienced during an allergic reaction: facial flushing, tingling or numbness, rash or hives, abdominal pain, diarrhea, headache, hypotension, or tachycardia. Symptom onset generally occurs within one to two hours of ingestion. Scombroid is rarely life threatening, and most affected persons recover within hours without residual problems. Over-the-counter antihistamines such as diphenhydramine are usually sufficient for treatment.

Gastroenteritis

Diarrhea associated with consumption of escolar is caused by an indigestible waxy ester (gempylotoxin) that is naturally present in the fish. Onset may be rapid, and the diarrhea is often oily or unusually colored. Symptoms can include abdominal discomfort and fecal incontinence.

Outbreak Investigation

Within a one-week period in November 2004, two local health jurisdictions reported separate clusters of scombroid. Cluster A occurred among participants in a restaurant-sponsored cooking demonstration where escolar was prepared and served as the main course. Cluster B affected a family of three who consumed a dinner of escolar purchased at a grocery store. Affected persons from both clusters developed symptoms of a histamine reaction soon after eating their respective escolar dishes, and several sought emergency care at local hospitals.

To better understand the clinical characteristics of these illnesses, epidemiologists interviewed 23 of the 24 cooking demonstration participants (cluster A). The survey asked about foods eaten at the demonstration, amount of escolar consumed, onset and type of symptoms, and treatment received. Scombroid was defined as flushing, numbness, hives/rash, or itching within 24 hours of eating escolar. Escolar-associated gastroenteritis (EAG) was defined as either abdominal cramps or diarrhea, not associated with other symptoms, within 24 hours of eating escolar.

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*epi*TRENDS
P.O. Box 47812
Olympia, WA 98504-7812

Mary C. Selecky
Secretary
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*Lepidocybium flavobrunneum*

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New Phone Numbers

Phone numbers for Communicable Disease Epidemiology have changed and are posted on the CDE website (see box for URL).

CDE Main Number
(24-hour)
206-418-5500

All respondents had eaten at least 75% of their estimated 4–5-ounce serving of escolar. Thirteen (57%) had symptoms of scombroid, all with onsets within one hour of their meal; eight of these 13 (62%) also reported diarrhea or abdominal discomfort. Of the 10 attendees who did not report symptoms of scombroid, eight (80%) reported symptoms of EAG alone. Overall, 21 participants (91%) reported at least one symptom of either scombroid or EAG within 24 hours of eating escolar. Five of the 21 (24%) sought treatment in an emergency department. Symptom duration ranged from one hour to 4.5 days, but symptoms most commonly resolved within 11.5 hours of onset.

Samples of escolar obtained from the restaurant associated with cluster A and the grocery store associated with cluster B were tested for decomposition and histamine. Both escolar samples showed decomposition; the histamine testing results are pending. A “trace-back” of these samples by the DOH Food Safety Program revealed that the restaurant and grocery store had purchased escolar from two different distributors. A single wholesaler had supplied these distributors with fish from a catch imported from Central America.

Characteristics of Scombrototoxin

Although anecdotal reports suggest that members of the *Scombridae* family (includes albacore, tuna, mackerel, and escolar) have been causing allergy-like reactions for decades, histamine was not implicated until the 1980s. Scombrototoxin has now been found in more than 60 fish species, including non-*Scombridae*. Toxin develops when fish are improperly refrigerated and bacterial decomposition produces histamine from free histidine. Scombrototoxin is heat-stable and is not destroyed by cooking. The contaminated fish may have a “peppery” or “metallic” taste. Toxin levels can be unevenly distributed throughout the fish and the amount of toxin needed to cause symptoms can vary from person to person. As a result, individuals sharing a single scombrototoxin-containing fish may show a wide range of symptoms.

Prevention and Reporting

Preventing the development of scombrototoxin in escolar and other fish depends on maintaining adequate refrigeration from the point of capture to the table. Raw fish should be stored refrigerated (40°F or below) or frozen (0°F or below) and thawed under refrigeration, in cold water, or rapidly in a microwave. Suspected cases or outbreaks of scombroid should be reported promptly to the local health jurisdiction so the source of the fish can be identified and contaminated fish removed from the market.

The Food and Drug Administration discourages the importation and interstate marketing of escolar and other gempylotoxin-containing fish. Although *Lepidocybium flavobrunneum* is the only species approved by the FDA for the market name “escolar,” this and similar species may be called snake mackerel, butterfish, oilfish, castor oil fish, rudderfish, waluu, or gemfish. Consumers should be aware of the many names of escolar and the adverse events associated with eating escolar and related species.

Visit the New Communicable Disease Epidemiology Website

<http://www.doh.wa.gov/ehsphl/Epidemiology/CD/default.htm>

It offers information for communicable disease investigators, public health practitioners, and the public. Included are:

- a searchable A–Z list of reportable communicable diseases
- a Reports/Publications page — including a link to the Flu Updates
- a page listing CD Epi staff, with links to each person’s email
- links to other DOH offices that also deal with communicable diseases and conditions

More resource pages will be added as they are developed. We welcome your comments.